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**RESIDENTIAL SOIL LEAD SAMPLING
NL/TARACORP SUPERFUND SITE, GRANITE CITY/MADISON, ILLINOIS**

Options for Sampling and Data Evaluation

As part of the Pre-Design Field Investigation (PDFI) for the NL/Taracorp Superfund Site, approximately 5300 soil samples have been collected from the residential areas surrounding the main industrial site. A map indicating the boundaries of the study area is shown in Drawing 1. The samples are being analyzed for total lead. The results of these analyses will be used to develop a residential soil remediation program for areas of Granite City and Madison with a soil lead concentration of greater than 500 parts per million (ppm).

ORIGINAL DATA ANALYSIS PLAN

As was discussed in our submittal to the USACE dated January 29, 1992 (Presentation of Early Results and Options for Evaluation of Data), WCC recommended that the basic remediation decision unit be one half of a city block. This size unit seemed appropriate for two reasons: First, the relationship between the average lead concentration within each unit and the distance from the Taracorp site suggested that, on average, the change in concentration over the width of each decision unit was relatively small; second, there would generally be sufficient samples within each unit to allow calculation of statistics needed to classify the unit as meeting or not meeting the established cleanup goal with a reasonable degree of confidence. While the USEPA determined that the remediation decision unit should be whole city blocks, they were in agreement with the basic analysis procedures that were proposed.

The second issue addressed in WCC's January submittal dealt with the method of statistical analysis. Two alternatives were advanced. One involved calculating the mean lead concentration for each decision unit and comparing that to the 500 ppm clean up criterion established in the ROD. This method required setting the percent confidence desired such that the mean for a decision unit was below the clean up

criteria. The second method requires selecting a percentile value for the minimum volume of soil in a decision unit that is required to be below the clean up standard.

STATEMENT OF THE PROBLEM

To date, samples have been collected from 831 residential and public properties (52% of the properties that were to be sampled as part of the scope of work). This represents all of the properties for which access has been obtained. These samples cover the entire residential study area albeit with varying numbers of samples per decision unit.

It is our understanding that the USEPA wishes to minimize the amount of additional sampling to be performed due to difficulty in obtaining additional property access. In order to evaluate the adequacy of the existing sample database, it is necessary to determine the distribution of the existing samples within the study area. Then the remediation decision units can be reevaluated to optimize the value of the existing data. It will also be necessary to establish the minimum sample population in relation to a variety of clean up decision parameters.

DATA ANALYSIS ALTERNATIVES

Redefinition of Remediation Decision Units

The original data analysis plan proposed by WCC would have defined a decision unit as one half of a city block (approximately 300 foot square). The USEPA indicated that they preferred using an entire city block. It was assumed that every residential property would be sampled. This now appears unlikely. WCC proposes to redefine the decision unit from a one block area to a two block area. Since the blocks are generally rectangular in shape, the longest dimension of the redefined unit will show little, if any, increase such that the potential change in concentration over the length of the unit will remain basically unchanged. It will not be feasible to combine every block with adjacent blocks. Some can be treated as separate remediation decision units. In a few other cases it is possible to form three block decision units to offset an inadequate number of samples in some areas.

Alternate Analysis Method - Averaging

An alternative method for determining whether an area has met the clean-up criteria compares the mean of the data for a decision unit to the established cleanup standard. This method requires fewer samples to achieve a given confidence level than the percentile method. However, for a highly variable sample population, a relatively small number of extreme values can drastically change the statistical results. For this reason, a remediation decision method based on the average or mean of the data from a decision unit compared to the clean-up standard has not been recommended.

Proposed Analysis Method - Upper Percentile Method

For the upper percentile method, a percentile is selected that sets a percentage of the soil in a decision unit that must have contamination levels below the clean up standard. This analysis method provides the best control of extreme values where the data is highly variable, such as analytical data from soil. Because of the high variability in the data produced from this site so far, it is recommended that the upper percentile method be used in the remediation decision process.

Redefinition of Minimum Sample Size Related to Confidence Levels

A way to ensure that the sample population for a given decision unit is statistically valid and still maintains a high confidence level that "dirty" areas are being remediated without additional sampling is to increase the chance that some percentage of "clean" areas will inadvertently be remediated also. If it is acceptable to increase the likelihood of this occurrence, then fewer samples are required for each decision unit.

To be able to maintain a high level of confidence that all "dirty" areas are being remediated, while possibly remediating some number of "clean" sites, requires setting two types of confidence limits. In order to evaluate whether a sufficient number of samples have been collected to achieve a given confidence level that a decision unit is a given percent "clean", those confidence level parameters that must be established are:

1. Confidence that all "dirty" decision units have been remediated, or, for instance, there is only a 5% chance (α) that more than 25% of the "dirty" soil (P_0) in a decision unit has not been remediated, where α is defined as the percent likelihood of having a false positive result with P_0 being defined as the maximum percentage of "dirty" soil allowed to remain on a "clean" site.
2. Confidence that no "clean" decision units have been remediated, or, for instance, there is a 25% chance (β) that at least 2% (P_1) of the remediated soil in a decision unit was "clean" where β is defined as the percent likelihood of having a false negative result with P_1 being defined as the maximum percentage of "clean" soil that will be inadvertently remediated.

Within this decision framework, it is possible to maintain a high level of confidence (α , P_0) that all "dirty" areas have been remediated with relatively few samples. However, as the number of samples decreases, the chance (β , P_1) of inadvertently remediating a "clean" area increases significantly. If an increased possibility of remediating a "clean" decision unit is not an acceptable alternative, then it is necessary to either increase the size of the decision unit (Combine it with adjacent areas), or to increase the number of samples within that decision unit.

RECOMMENDATIONS

For the purposes of this evaluation, we are not suggesting that we change the confidence level for judging a decision unit as "clean", nor are we suggesting that we change the percentage of the unit that must be "clean". Based on previous discussions with USACE and USEPA, and on this evaluation, we believe that it is most appropriate to establish our remediation decision parameters as having 95% confidence that 75% of the decision unit is "clean".

By attempting to combine single blocks into two block decision units, the number of decision units is reduced to a total of 46. A list of the proposed decision units is presented in Table 1. Of this total, 6 decision units remain as single blocks that are not easily combined with another block. For a few areas where a very limited number of samples per block were collected, it is necessary to redefine 3 decision units as three

block units. The nine blocks within the study area that are 100% commercial have not been incorporated into any decision unit. A map outlining the proposed decisions units is included in Drawing 2.

For a number of these new decision units, the number of samples is still not sufficient to generate statistics with the target confidence limits. Table 1 summarizes, on a decision unit basis, the boundaries of each unit, the number of samples taken by depth interval, and the chance of remediating a clean decision unit. The last part of this table is set up to illustrate the percent chance of remediating a clean site with 95% confidence that 95%, 90%, and 75% of the decision unit is clean. The percentages listed under these columns are the probabilities that a decision unit where 2% or less of the soil in the unit is "dirty" will be remediated unnecessarily. Table 2 summarizes how the chance of remediating a decision unit unnecessarily where 2% or less of the soil is "dirty" decreases as the number of samples for a decision unit increase.

**TABLE 1
DECISION UNIT SUMMARY
AND CONFIDENCE ESTIMATES**

DECISION UNIT IDENTIFIER	GRANITE CITY DECISION UNITS	No. SAMPLES IN ORIGINAL PLAN (A,B,C)	No. SAMPLES COLLECTED (A,B,C)	PROBABILITY OF A 'CLEAN' UNIT BEING IDENTIFIED AS 'DIRTY'		
				95 % Confident Unit Is 95% "Clean"	95 % Confident Unit Is 90% "Clean"	95 % Confident Unit Is 75% "Clean"
1*	2200 Benton/Cleveland	66/66/66	43/43/43	> 50 %	45%	0.1%
2	2200 Cleveland/Delmar/Edison	162/162/162	95/95/95	> 50 %	2.5%	0.1%
3	2200 Edison/State/Grand	138/138/138	87/87/87	> 50 %	5%	0.1%
4	2200 Grand/Madison/Iowa	92/92/92	38/38/38	> 50 %	> 50 %	0.1%
5	2100 Adams/Benton/Cleveland	124/124/124	88/88/88	> 50 %	5%	0.1%
6	2100 Cleveland/Delmar/Edison	96/96/96	189/189/189	35%	0.1%	0.1%
7	2100 Edison/State/Grand	122/122/122	54/54/54	> 50 %	25%	0.1%
8	2100 Madison/Iowa/Washington	16/16/16	11/11/11	> 50 %	> 50 %	40%
9*	2100 Washington/Lee	38/38/38	26/26/25	> 50 %	> 50 %	0.1%
10	2000 Adams/Benton/Cleveland	46/46/46	23/23/23	> 50 %	> 50 %	0.5%
11	2000 Cleveland/Delmar/Edison	84/84/84	20/20/20	> 50 %	> 50 %	2.5%
12**	2000 Edison/State/Grand/Madison	48/48/48	23/23/23	> 50 %	> 50 %	0.5%
13	2000 Iowa/Washington/Lee	60/60/60	36/36/36	> 50 %	> 50 %	0.1%
14	1900 Adams/Benton/Cleveland	72/72/72	48/48/48	> 50 %	35%	0.1%
15	1900 Cleveland/Delmar/Edison	24/24/24	21/21/21	> 50 %	> 50 %	1%
16	1900 State/Grand/Madison	26/26/26	9/9/9	> 50 %	> 50 %	> 50 %
17**	1800 Delmar/Edison/State/Grand	24/24/24	2/2/2	> 50 %	> 50 %	> 50 %
18	1700 Cleveland/Delmar/Edison	98/98/98	63/62/61	> 50 %	20%	0.1%

LEGEND
 * = Single Block Decision Units
 ** = Triple Block Decision Units

**TABLE 1
DECISION UNIT SUMMARY
AND CONFIDENCE ESTIMATES**

DECISION UNIT IDENTIFIER	GRANITE CITY DECISION UNITS	No. SAMPLES IN ORIGINAL PLAN (A,B,C)	No. SAMPLES COLLECTED (A,B,C)	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
				95 % Confident Unit Is 95% "Clean"	95 % Confident Unit Is 90% "Clean"	95 % Confident Unit Is 75% "Clean"
19**	1700 Edison/State/Grand/Madison	52/52/52	27/27/27	> 50 %	> 50 %	0.1%
20*	1600 Cleveland/Delmar	26/26/26	24/24/24	> 50 %	> 50 %	0.25%
21	1600 Delmar/Edison/State/Grand	38/38/38	26/26/26	> 50 %	> 50 %	0.1%
22	2500-2600 Jefferson/Denver/Rock/W. 20th/Nevada	38/38/38	26/26/26	> 50 %	> 50 %	0.1%
23	2000 Rock/Ohio/Bryan/Alley	69/69/69	30/30/30	> 50 %	> 50 %	0.1%
24	1700 Spruce/Maple/Olive	94/94/94	66/66/66	> 50 %	20%	0.1%
25	1600 Spruce/Maple/Olive	112/112/112	82/82/82	> 50 %	5%	0.1%
26	1700 Olive/Chestnut/Walnut	92/92/92	66/66/66	> 50 %	20%	0.1%
27	1600 Olive/Alley/900-947 Niederinghaus	48/48/48	20/20/20	> 50 %	> 50 %	2.5%
28	800-844 Niederinghaus	48/48/48	23/23/23	> 50 %	> 50 %	0.5%

**TABLE 1
DECISION UNIT SUMMARY
AND CONFIDENCE ESTIMATES**

DECISION UNIT IDENTIFIER	MADISON DECISION UNITS	No. SAMPLES IN ORIGINAL PLAN (A,B,C)	No. SAMPLES COLLECTED (A,B,C)	CONFIDENCE THAT A "CLEAN" UNIT IS NOT IDENTIFIED AS "DIRTY"		
				95 % Confident Unit Is 95% "Clean"	95 % Confident Unit Is 90% "Clean"	95 % Confident Unit Is 75% "Clean"
29	1400 State/Grand/Madison	110/110/110	42/42/42	> 50 %	45%	0.1%
30	1400 Madison/Iowa/Washington	92/92/92	14/14/14	> 50 %	> 50 %	20%
31	1300 State/Grand/Madison	60/60/60	22/22/22	> 50 %	> 50 %	0.5%
32	1300 Madison/Iowa/Washington	63/63/63	12/12/12	> 50 %	> 50 %	30%
33	1200 State/Grand/Madison	44/44/44	14/14/14	> 50 %	> 50 %	20%
34	1200 Madison/Iowa/Washington	70/70/70	34/34/34	> 50 %	> 50 %	0.1%
35	1000 State/Grand/Madison	138/138/138	26/26/26	> 50 %	> 50 %	0.1%
36	1000 Madison/Iowa/Washington	122/122/122	36/36/36	> 50 %	> 50 %	0.1%
37	800 State/Grand/Madison	104/104/104	40/40/40	> 50 %	> 50 %	0.1%
38	800 Madison/Iowa/Washington	152/152/152	54/54/54	> 50 %	25%	0.1%
39	1600 Elizabeth/Kennedy/Alley	38/38/38	28/28/28	> 50 %	> 50 %	0.1%
40	1700 Elizabeth/Kennedy/Alley	50/50/50	29/29/29	> 50 %	> 50 %	0.1%
41	1200 Washington/Alton/Greenwood	57/57/57	35/35/35	> 50 %	> 50 %	0.1%
42	1200 Greenwood/Reynolds/McCambridge	94/94/94	42/42/42	> 50 %	45%	0.1%
43	1000 Alton/Greenwood/Reynolds	86/86/86	29/29/29	> 50 %	> 50 %	0.1%
44*	1000 Reynolds/McCambridge	42/42/42	20/20/20	> 50 %	> 50 %	2.5%
45	900 Greenwood/Reynolds/McCambridge/Edwardsville	92/92/92	24/24/24	> 50 %	> 50 %	0.25%
46*	600 Meredocia/Savelor	34/34/34	22/22/22	> 50 %	> 50 %	0.5%

LEGEND

* = Single Block Decision Units

** = Triple Block Decision Units

TABLE 1 (Continued)
100% COMMERCIAL BLOCKS (No Sampling)

1500 State/Grand
1500 Grand/Madison
1600 Grand/Madison
1800 Benton/Cleveland
1800 Cleveland/Delmar
1800 Grand/Madison
1900 Edison/State
2000 Madison/Iowa
2100 Grand/Madison

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
2	> 50%	> 50%	> 50%
3	> 50%	> 50%	> 50%
4	> 50%	> 50%	> 50%
5	> 50%	> 50%	> 50%
6	> 50%	> 50%	> 50%
7	> 50%	> 50%	> 50%
8	> 50%	> 50%	> 50%
9	> 50%	> 50%	> 50%
10	> 50%	> 50%	> 50%
11	> 50%	> 50%	40%
12	> 50%	> 50%	30%
13	> 50%	> 50%	25%
14	> 50%	> 50%	20%
15	> 50%	> 50%	20%
16	> 50%	> 50%	10%
17	> 50%	> 50%	5%
18	> 50%	> 50%	5%
19	> 50%	> 50%	2.5%
20	> 50%	> 50%	2.5%
21	> 50%	> 50%	1%
22	> 50%	> 50%	0.5%
23	> 50%	> 50%	0.5%
24	> 50%	> 50%	0.25%
25	> 50%	> 50%	0.1%
26	> 50%	> 50%	0.1%
27	> 50%	> 50%	0.1%
28	> 50%	> 50%	0.1%
29	> 50%	> 50%	0.1%
30	> 50%	> 50%	0.1%
31	> 50%	> 50%	0.1%
32	> 50%	> 50%	0.1%
33	> 50%	> 50%	0.1%
34	> 50%	> 50%	0.1%
35	> 50%	> 50%	0.1%
36	> 50%	> 50%	0.1%
37	> 50%	> 50%	0.1%
38	> 50%	> 50%	0.1%
39	> 50%	> 50%	0.1%

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
40	> 50%	45%	0.1%
41	> 50%	45%	0.1%
42	> 50%	45%	0.1%
43	> 50%	45%	0.1%
44	> 50%	40%	0.1%
45	> 50%	40%	0.1%
46	> 50%	40%	0.1%
47	> 50%	35%	0.1%
48	> 50%	35%	0.1%
49	> 50%	35%	0.1%
50	> 50%	35%	0.1%
51	> 50%	30%	0.1%
52	> 50%	30%	0.1%
53	> 50%	30%	0.1%
54	> 50%	25%	0.1%
55	> 50%	25%	0.1%
56	> 50%	25%	0.1%
57	> 50%	25%	0.1%
58	> 50%	25%	0.1%
59	> 50%	20%	0.1%
60	> 50%	20%	0.1%
61	> 50%	20%	0.1%
62	> 50%	20%	0.1%
63	> 50%	20%	0.1%
64	> 50%	20%	0.1%
65	> 50%	20%	0.1%
66	> 50%	20%	0.1%
67	> 50%	20%	0.1%
68	> 50%	20%	0.1%
69	> 50%	20%	0.1%
70	> 50%	20%	0.1%
71	> 50%	10%	0.1%
72	> 50%	10%	0.1%
73	> 50%	10%	0.1%
74	> 50%	10%	0.1%
75	> 50%	10%	0.1%
76	> 50%	10%	0.1%
77	> 50%	10%	0.1%

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
78	> 50%	10%	0.1%
79	> 50%	10%	0.1%
80	> 50%	10%	0.1%
81	> 50%	10%	0.1%
82	> 50%	5%	0.1%
83	> 50%	5%	0.1%
84	> 50%	5%	0.1%
85	> 50%	5%	0.1%
86	> 50%	5%	0.1%
87	> 50%	5%	0.1%
88	> 50%	5%	0.1%
89	> 50%	5%	0.1%
90	> 50%	5%	0.1%
91	> 50%	5%	0.1%
92	> 50%	5%	0.1%
93	> 50%	2.5%	0.1%
94	> 50%	2.5%	0.1%
95	> 50%	2.5%	0.1%
96	> 50%	2.5%	0.1%
97	> 50%	2.5%	0.1%
98	> 50%	2.5%	0.1%
99	> 50%	2.5%	0.1%
100	> 50%	2.5%	0.1%
101	> 50%	2.5%	0.1%
102	> 50%	2.5%	0.1%
103	> 50%	2.5%	0.1%
104	> 50%	2.5%	0.1%
105	> 50%	1%	0.1%
106	> 50%	1%	0.1%
107	> 50%	1%	0.1%
108	> 50%	1%	0.1%
109	> 50%	1%	0.1%
110	> 50%	1%	0.1%
111	> 50%	1%	0.1%
112	> 50%	1%	0.1%
113	> 50%	1%	0.1%
114	> 50%	0.5%	0.1%
115	> 50%	0.5%	0.1%

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
116	> 50%	0.5%	0.1%
117	> 50%	0.5%	0.1%
118	> 50%	0.5%	0.1%
119	> 50%	0.5%	0.1%
120	> 50%	0.5%	0.1%
121	> 50%	0.5%	0.1%
122	> 50%	0.5%	0.1%
123	> 50%	0.25%	0.1%
124	> 50%	0.25%	0.1%
125	> 50%	0.25%	0.1%
126	> 50%	0.25%	0.1%
127	> 50%	0.25%	0.1%
128	> 50%	0.25%	0.1%
129	> 50%	0.25%	0.1%
130	> 50%	0.25%	0.1%
131	> 50%	0.25%	0.1%
132	> 50%	0.25%	0.1%
133	> 50%	0.25%	0.1%
134	> 50%	0.25%	0.1%
135	> 50%	0.1%	0.1%
136	> 50%	0.1%	0.1%
137	> 50%	0.1%	0.1%
138	> 50%	0.1%	0.1%
139	> 50%	0.1%	0.1%
140	> 50%	0.1%	0.1%
141	> 50%	0.1%	0.1%
142	> 50%	0.1%	0.1%
143	> 50%	0.1%	0.1%
144	> 50%	0.1%	0.1%
145	> 50%	0.1%	0.1%
146	> 50%	0.1%	0.1%
147	> 50%	0.1%	0.1%
148	> 50%	0.1%	0.1%
149	> 50%	0.1%	0.1%
150	> 50%	0.1%	0.1%
151	> 50%	0.1%	0.1%
152	> 50%	0.1%	0.1%
153	> 50%	0.1%	0.1%

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
154	> 50%	0.1%	0.1%
155	> 50%	0.1%	0.1%
156	> 50%	0.1%	0.1%
157	45%	0.1%	0.1%
158	45%	0.1%	0.1%
159	45%	0.1%	0.1%
160	45%	0.1%	0.1%
161	45%	0.1%	0.1%
162	45%	0.1%	0.1%
163	45%	0.1%	0.1%
164	45%	0.1%	0.1%
165	45%	0.1%	0.1%
166	45%	0.1%	0.1%
167	45%	0.1%	0.1%
168	45%	0.1%	0.1%
169	45%	0.1%	0.1%
170	45%	0.1%	0.1%
171	45%	0.1%	0.1%
172	45%	0.1%	0.1%
173	45%	0.1%	0.1%
174	40%	0.1%	0.1%
175	40%	0.1%	0.1%
176	40%	0.1%	0.1%
177	40%	0.1%	0.1%
178	40%	0.1%	0.1%
179	40%	0.1%	0.1%
180	40%	0.1%	0.1%
181	40%	0.1%	0.1%
182	40%	0.1%	0.1%
183	40%	0.1%	0.1%
184	40%	0.1%	0.1%
185	40%	0.1%	0.1%
186	40%	0.1%	0.1%
187	40%	0.1%	0.1%
188	40%	0.1%	0.1%
189	35%	0.1%	0.1%
190	35%	0.1%	0.1%
191	35%	0.1%	0.1%

TABLE 2
NO. OF SAMPLES VS. CONFIDENCE LEVEL

No. OF SAMPLES	PROBABILITY OF A "CLEAN" UNIT BEING IDENTIFIED AS "DIRTY"		
	95% Confident Unit is 95 % "Clean"	95% Confident Unit is 90 % "Clean"	95% Confident Unit is 75 % "Clean"
192	35%	0.1%	0.1%
193	35%	0.1%	0.1%
194	35%	0.1%	0.1%
195	35%	0.1%	0.1%
196	35%	0.1%	0.1%
197	35%	0.1%	0.1%
198	35%	0.1%	0.1%
199	35%	0.1%	0.1%
200	35%	0.1%	0.1%

****NOTE:** Statistical analysis based on 95% Confident of the chances of having a false positive and 98% Confident of the chances of having a false negative.

LEGEND



UNSATURATED ZONE



UNSATURATED ZONE - PROPERTY BOUNDARIES

UNSATURATED ZONE - PERFORMANCE BOUNDARY

UNSATURATED ZONE

REMEDIAL ACTION UNIT IDENTIFIER



Revision No.	Description	Date	By	App.

REVISIONS

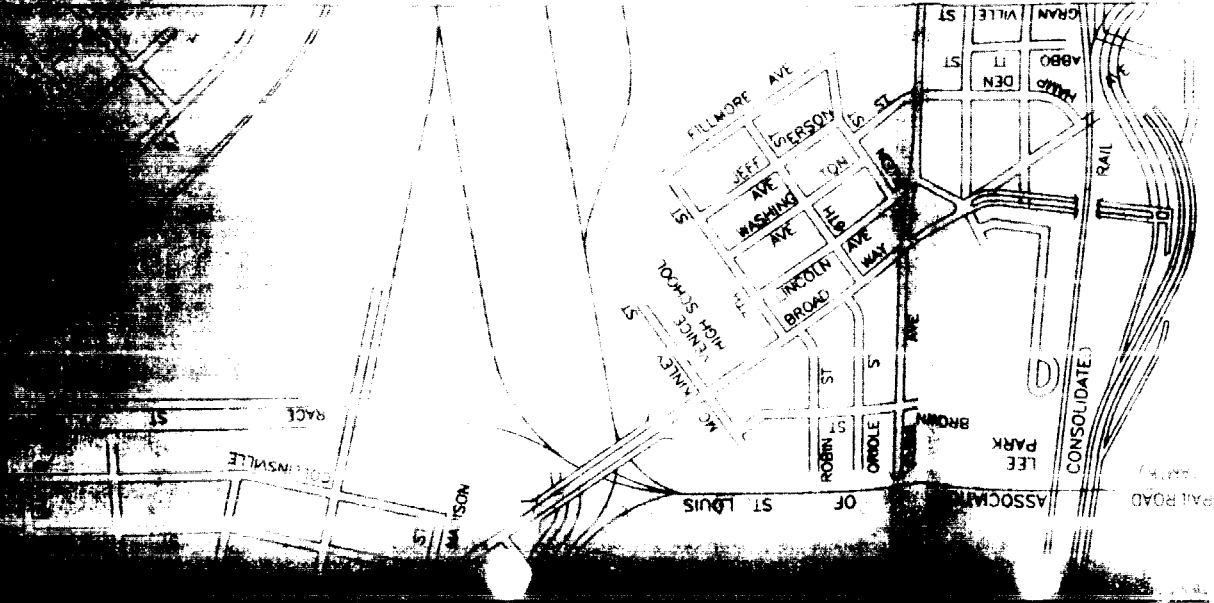
NL/TARACORP SUPERFUND SITE
U.S. ARMY CORPS OF ENGINEERS
GRANITE CITY, ILLINOIS

REMEDIAL ACTION DECISION UNIT LOCATION MAP
ADJACENT RESIDENTIAL AREAS






Date: 7/11/92	Project Number: 89MC114V	Drawing Number: 3
Drawn by: all	Design by:	Checked by:

Woodward-Clyde
Consultants

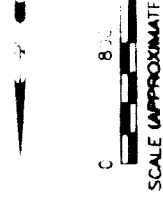




LEGEND

-  MAIN INDUSTRIAL AREA
-  INVESTIGATION AREA BO
-  COMMERCIAL PROPERTY
-  DECISION UNIT
-  DECISION UNIT IDENTIFIER

20



Revision No.	Description

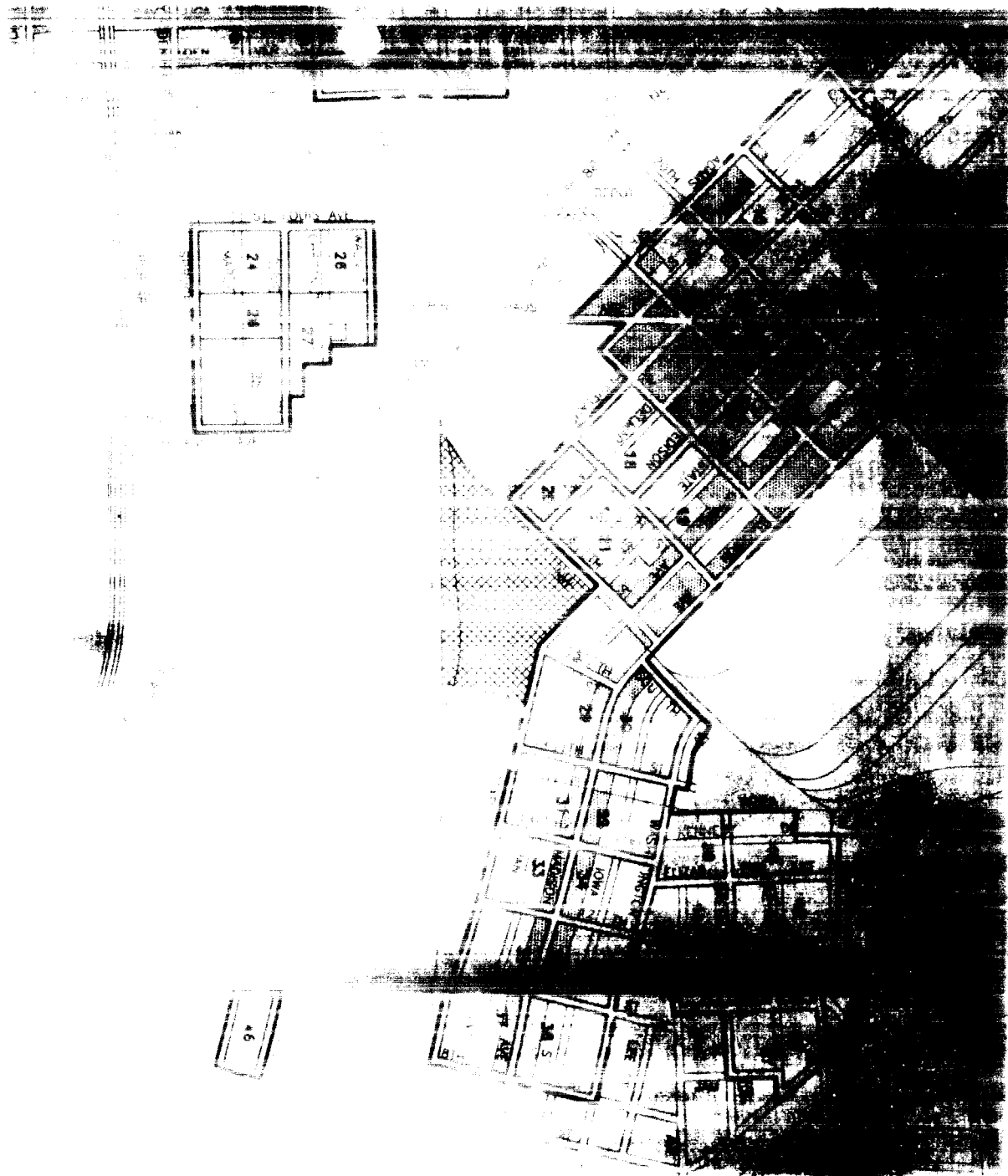
REVISIONS

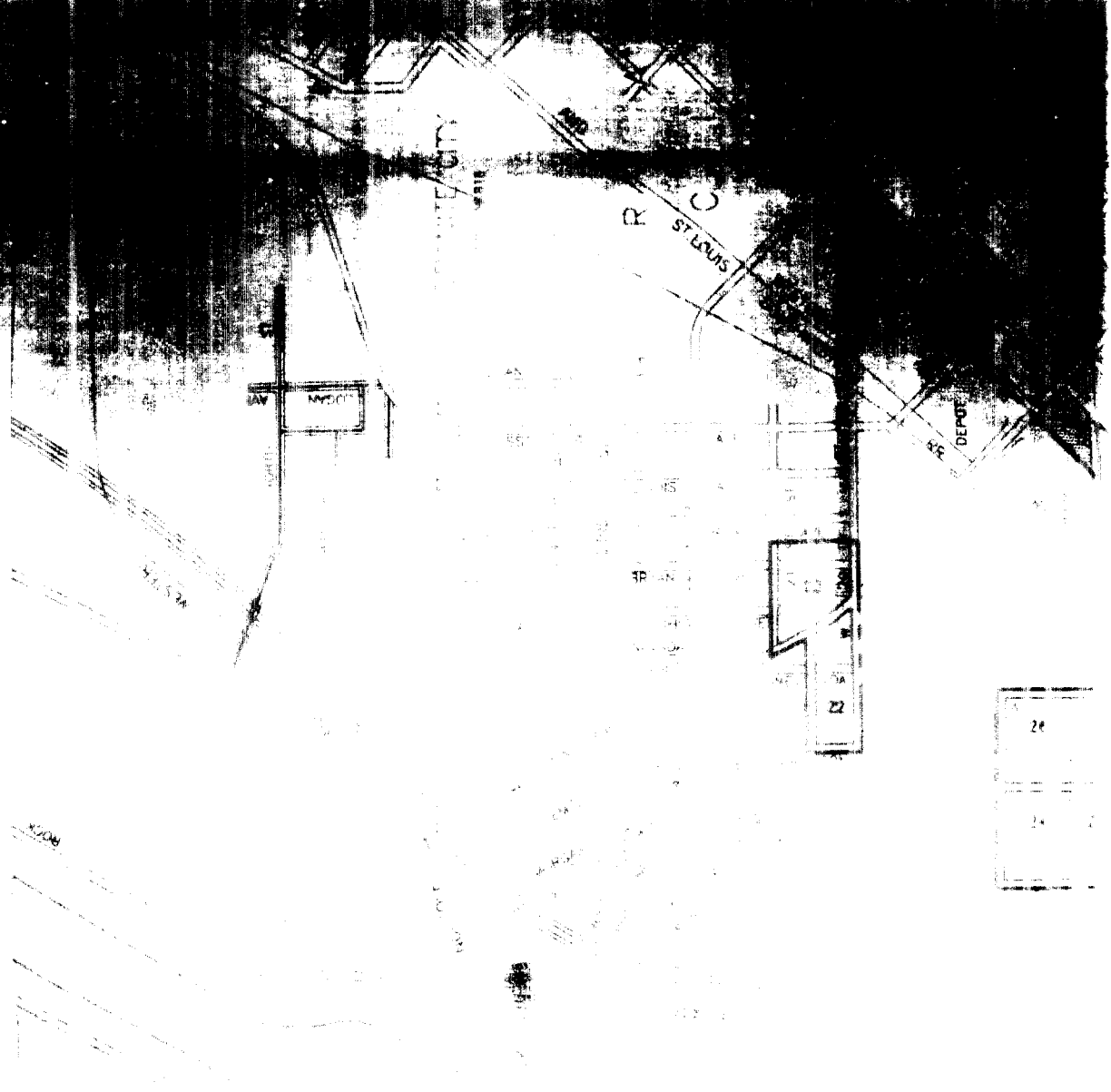
NL/TARACORP SUPERFUND
U.S. ARMY CORPS OF ENGINEERS
GRANITE CITY, ILLINOIS

REMEDIAL DECISION UNIT
ADJACENT RESIDENTIAL

Date: 7/11/82	Project Number: 80042
Drawn by: cu	Design by:

Woodward-Clyde
Consultants

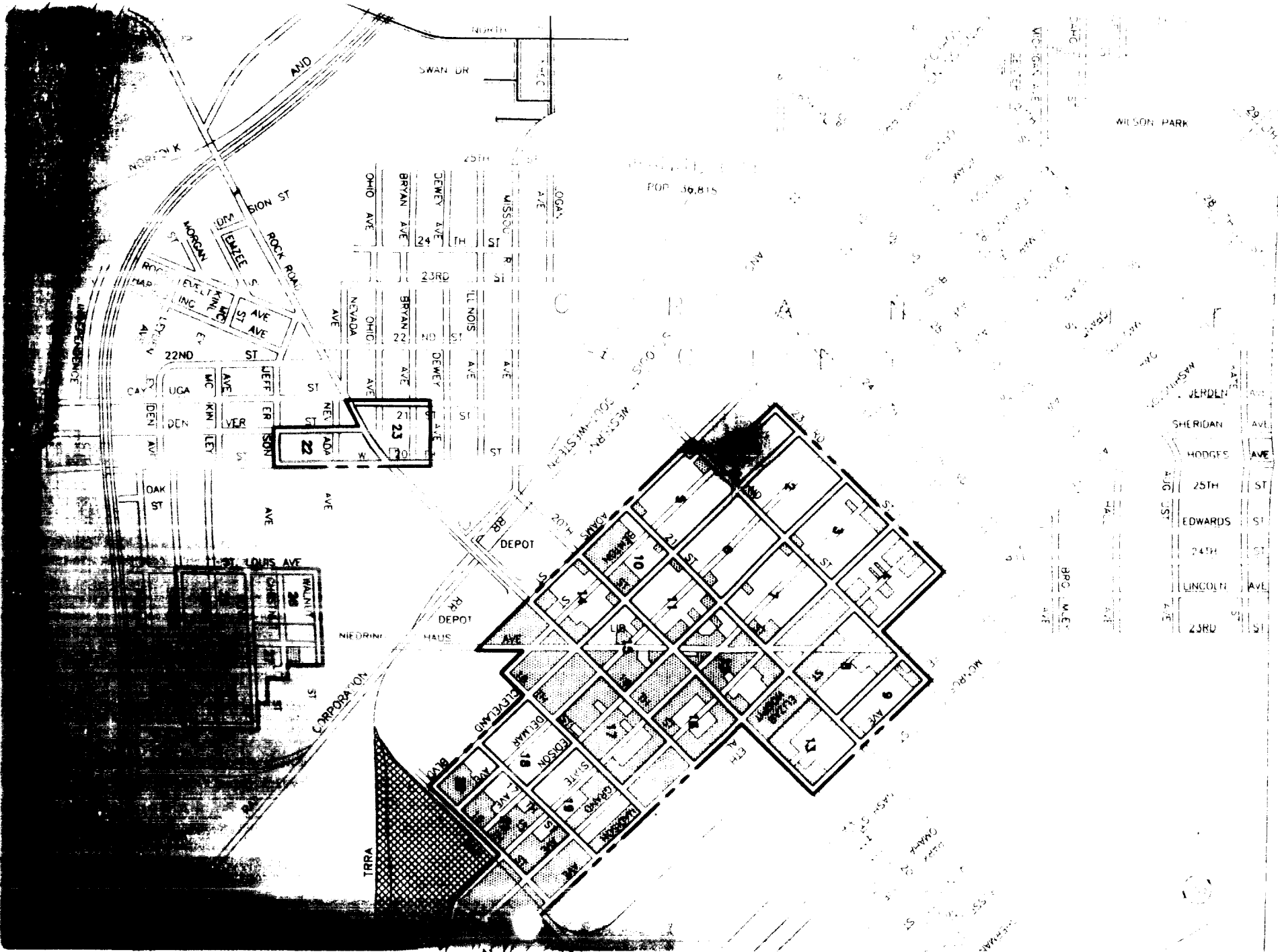




24
24

10.35



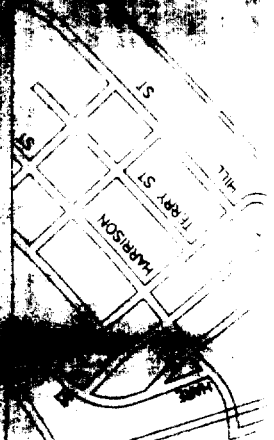


POP. 36,815

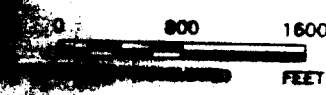
WILSON PARK

20TH	ST
21ST	ST
22ND	ST
23RD	ST
24TH	ST
25TH	ST
26TH	ST
27TH	ST
28TH	ST
29TH	ST
30TH	ST
31ST	ST
32ND	ST
33RD	ST
34TH	ST
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38TH	ST
39TH	ST
40TH	ST
41ST	ST
42ND	ST
43RD	ST
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83RD	ST
84TH	ST
85TH	ST
86TH	ST
87TH	ST
88TH	ST
89TH	ST
90TH	ST
91ST	ST
92ND	ST
93RD	ST
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95TH	ST
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100TH	ST





ST
CENTRAL



Revision No.	Description	Date	By	App.

REVISIONS

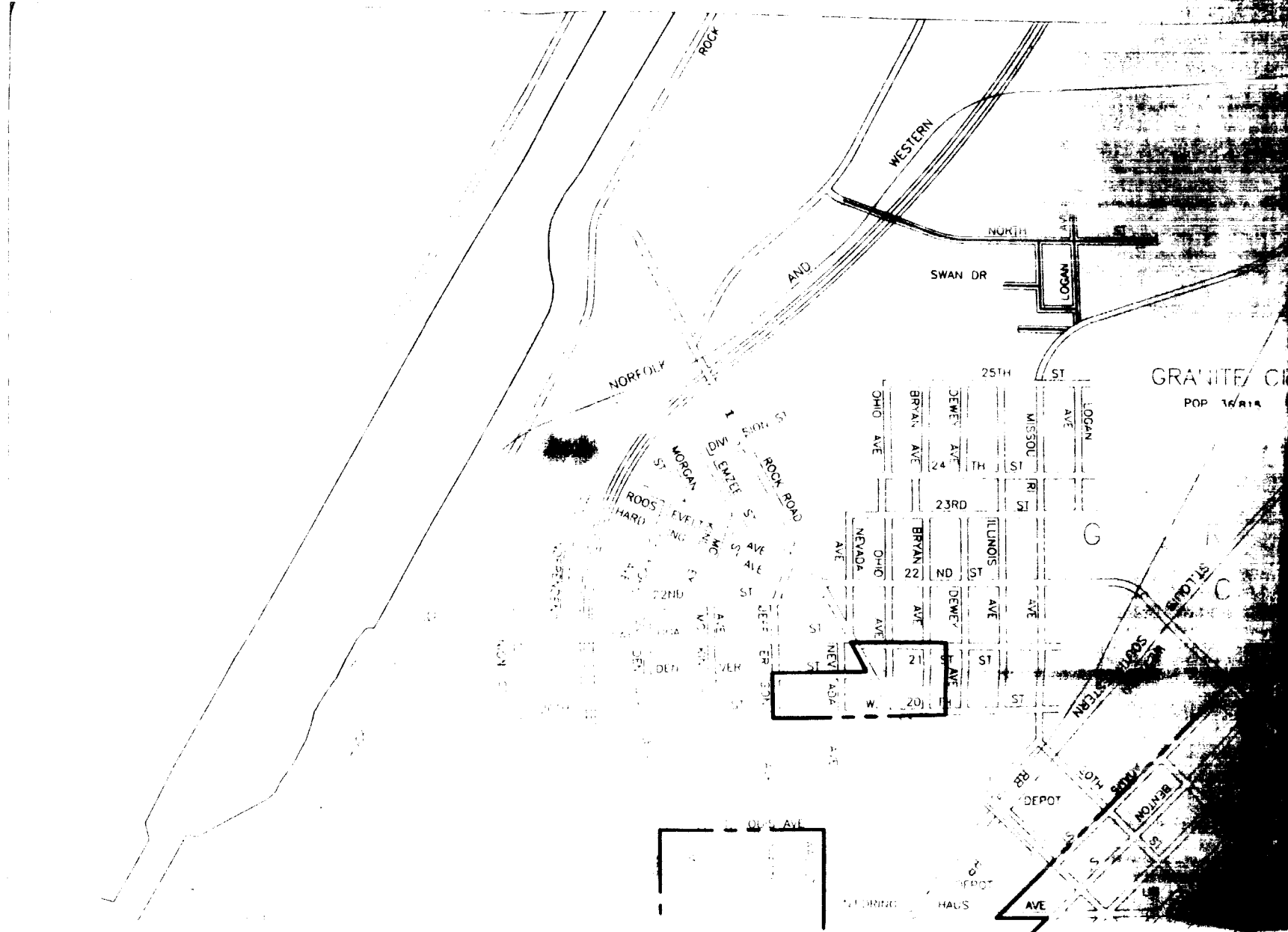
NL/TARACORP SUPERFUND SITE
U.S. ARMY CORPS OF ENGINEERS
GRANITE CITY, ILLINOIS

SITE PLAN
INDUSTRIAL & RESIDENTIAL AREA

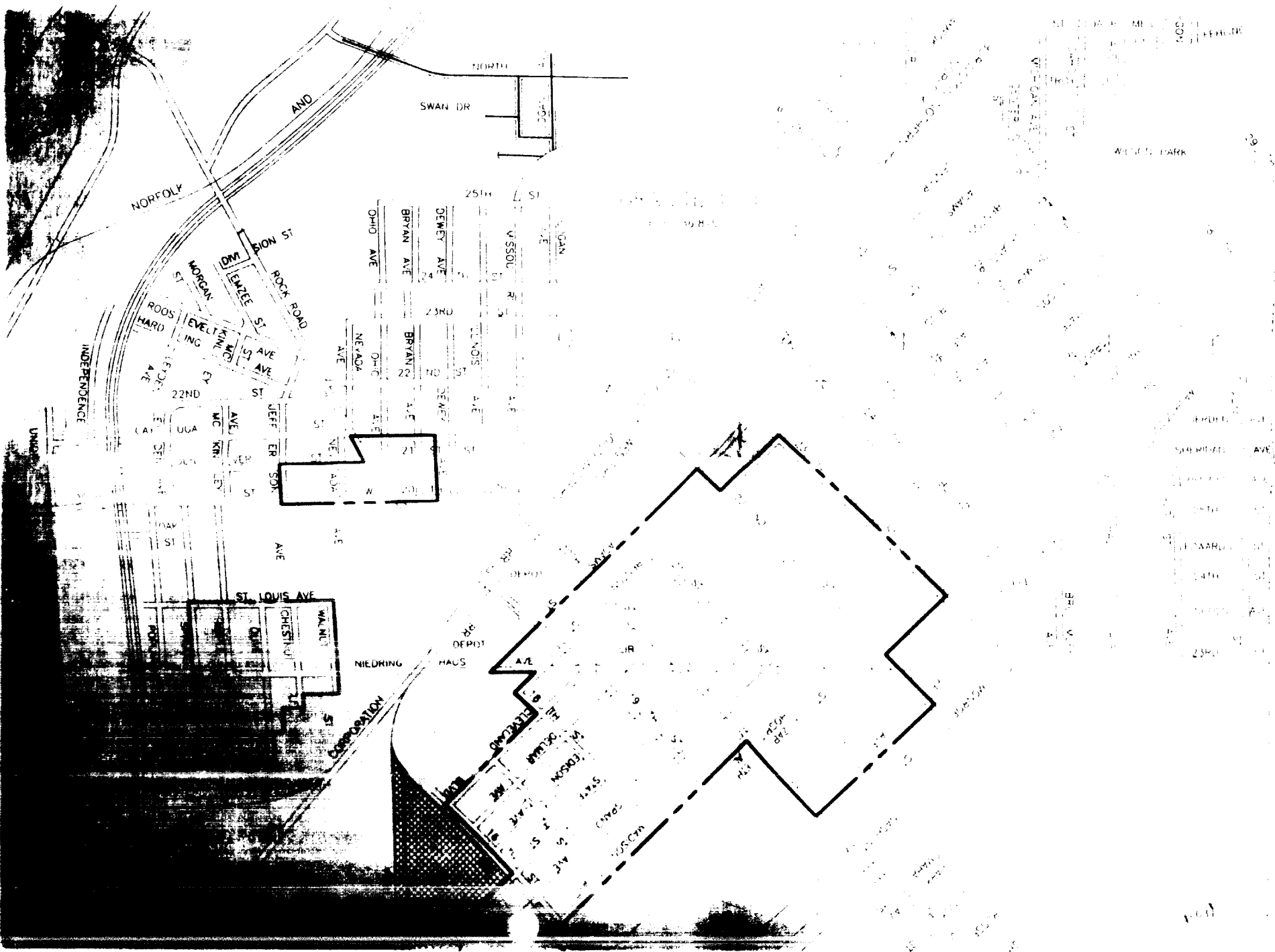
Date:	7/11/92	Project Number:	89MC114V	Drawing	
Drawn by:		Design by:		Checked	

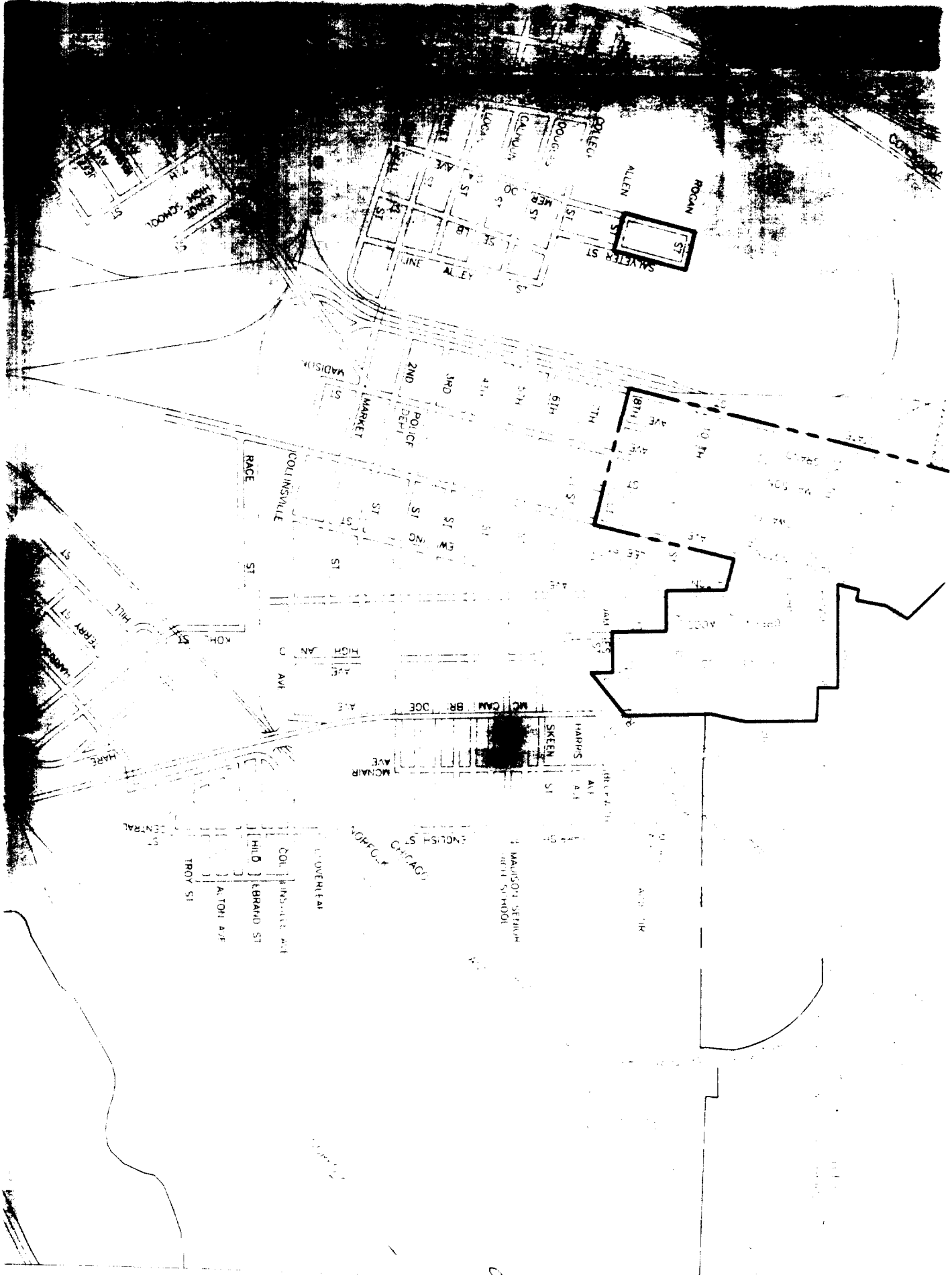
Edward-Clyde
Engineers











LEGEND



MAP SYMBOL

INSTRUMENT